

TITLE

GENES ENCODING CAROTENOID COMPOUNDS

ABSTRACT OF THE DISCLOSURE

Genes have been isolated from *Pectobacterium cypripedii*  
5 encoding geranylgeranyl pyrophosphate (GGPP) synthase (CrtE),  
phytoene synthase (CrtB), phytoene desaturase (CrtI), lycopene cyclase  
(CrtY),  $\beta$ -carotene hydroxylase (CrtZ), and zeaxanthin glucosyl transferase  
(CrtX) activity. The genes and their products are useful for the conversion  
of farnesyl pyrophosphate to carotenoids. Vectors containing those DNA  
10 segments, host cells containing the vectors and methods for producing  
those enzymes by recombinant DNA technology in transformed host  
organisms are disclosed.

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